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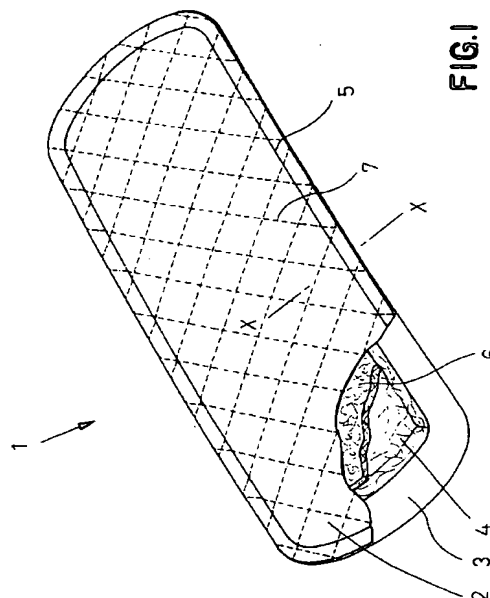
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(54) **Disposable body fluids absorbent padding.**

(57) A disposable body fluids absorbent padding comprising a liquid-guiding fibrous sheet (6) interposed between a liquid-permeable topsheet (2) and a liquid-absorbent core (4) is intermittently fused to said topsheet (2) and integrally bonded together in the direction of a thickness defined between the upper surface of said topsheet (2) and the lower surface of said fibrous layer (6) at these fused spots (7).



EP 0 685 214 A2

The present invention relates to a disposable body fluids absorbent padding and, more particularly, to a body fluids padding such as menstruation pads, diapers for infants, diapers for incontinence and the like.

It is well known in making such paddings that a topsheet is generally made from hydrophobic materials, of which the inner surface is covered with a liquid-guiding fibrous layer being less hydrophobic than the topsheet or rather hydrophilic in contact with a liquid-absorbent core in order to alleviate a feeling of wetness due to the body fluids during use of the padding by rapidly guiding the body fluids discharged over the topsheet into the core. For example, Japanese Laid-Open Patent Application No. 1982-1340 discloses a technique according to which a topsheet made of a hydrophobic perforated plastic film is applied on its lower surface by means of suitable adhesive, then fibers being less hydrophobic than the topsheet are flocked on the adhesive to form a thin layer and this thin layer is put against a liquid-absorbent core so that the body fluids may be more rapidly transferred to the core than in the case of the topsheet without the thin layer.

While the technique disclosed in the above-identified literature tends to bond the thin layer extending over the lower surface of the topsheet integrally to the topsheet by means of adhesive applied to the lower surface, the thin layer may have some portions which can hardly or can never come in contact with adhesive, depending on a thickness of the thin layer and such portions would be hardly bonded to the topsheet or even spaced from the topsheet. Should the body fluids absorbent padding be bent during its actual use, component fibers of the thin layer will be loosened from one another or peeled off from the topsheet and passages of the body fluids established by capillary action will be interrupted there. Consequently, the body fluids will be prevented from being rapidly transferred to the core and stay on the upper surface of the topsheet for a long time, causing stuffiness or eruption. In addition, such interruption of the passages will be apt to cause the body fluids to leak sideways.

It is a principal object of the invention to solve such problems by integrally bonding the liquid-guiding fibrous layer to the topsheet by fusion of hot melt materials contained in the topsheet and the liquid-guiding fibrous layer, respectively.

The object set forth above is achieved, according to the invention, by a disposable body fluids absorbent padding comprising a liquid-permeable topsheet, a liquid-impermeable backsheet, a liquid-absorbent core disposed between these two sheets and a liquid-guiding fibrous layer being more hydrophilic than said topsheet and interposed between said topsheet and said liquid-absorbent core in order to guide the body fluids from said topsheet into said core,

wherein hot melt materials contained in said topsheet and said liquid-guiding fibrous layer, respectively, are fused at spots arranged intermittently in a plane of said topsheet and thereby said topsheet and said liquid-guiding fibrous layer are integrally bonded together at said spots in the direction of a thickness defined between the upper surface of said topsheet and the lower surface of said liquid-guiding fibrous layer.

The disposable body fluids absorbent padding constructed as described above is advantageous in that, even during its actual use, the component fibers of the liquid-guiding fibrous layer are neither loosened from one another nor peeled off from the lower surface of the topsheet at and adjacent the fused spots independently of its thickness, since the topsheet and the liquid-guiding fibrous layer are integrally bonded to each other in the direction of thickness by fusion of the hot melt material contained in them, respectively.

The invention will now be described in more detail by way of example with reference to the accompanying drawings, wherein:-

Fig. 1 is a perspective view showing an embodiment of the invention in the form of a menstruation pad as partially broken away; and

Fig. 2 is a sectional view taken along a line X - X in Fig. 1.

Referring to Fig. 1, a menstruation pad 1 comprises a liquid-permeable topsheet 2, a liquid-impermeable backsheet 3 and a liquid-absorbent core 4 disposed between these two sheets 2, 3 wherein the top- and backsheet 2, 3 are water-tightly bonded together by a seal line 5 along their portions extending outward beyond a peripheral edge of the core 4. As will be described later in more detail, a liquid-guiding fibrous layer 6 is bonded to the lower (i.e., not skin-contacting) surface of the topsheet 2 and put against the core 4. Over the upper surface of the topsheet 2, a plurality of fused spots are arranged intermittently as individually viewed but in a lattice pattern when they are viewed as a whole. The topsheet 2 is preferably made of a hydrophobic sheet containing therein hot melt materials, specifically a nonwoven fabric containing 5% or higher by weight of thermoplastic synthetic fibers, split yarns fibrillated from a thermoplastic synthetic resin film or a mixture thereof or a liquid-permeable perforated thermoplastic synthetic resin film. The fibrous layer 6 comprises suitable fibrous materials such as a nonwoven fabric containing 5% or higher by weight of hot melt fibrous materials inclusive of said split yarns and less hydrophobic than the topsheet 2. The fibrous layer 6 is also lower than the topsheet 2 in a fibrous density and higher in a cushion. While the fibrous materials similar to those of the topsheet 2 may be used to form the fibrous layer 6, such fibrous materials are preferably subjected to an appropriate treatment so as to be less hydrophobic than the topsheet, i.e., so as to become rather

hydrophilic.

Referring to Fig. 2, the topsheet 2 and the fibrous layer 6 are integrally bonded together in the direction of thickness defined between the upper surface of the topsheet 2 and the lower surface of the fibrous sheet 6 at fused spots 7 by fusion of the hot materials contained in them, respectively. In consequence, the component fibers of these topsheet 2 and fibrous layer 6 are neither loosened nor peeled off from one another at and adjacent the fused spots 7, independently of their thicknesses. A distance between each pair of adjacent fused spots 7 may be appropriately selected not only to maintain the topsheet 2 and the fibrous layer 6 in close contact with each other but also to maintain their component fibers reliably intertwined, respectively. Each of the fused spots 7 is compressed to have a high density and to form a groove along which the body fluids may diffusively flow and rapidly guide them into the core 4. In this manner, the core 4 is optimally utilized.

In the pad 1, menstrual blood discharged onto the upper surface of the topsheet 2 is guided to the relatively hydrophilic fibrous layer 6 immediately underlying the topsheet 2 and then transferred into the core 4. The fibrous layer 6 functions to transfer the menstrual blood into the core 4 under the capillary action provided by its component fibers and the fused spots 7 serve to assure that said capillary action is not interrupted in the direction of thickness by maintaining the upper surface of the fibrous layer 6 in close contact with the lower surface of the topsheet 2 and at the same time by maintaining the component fibers of the fibrous layer 6 reliably intertwined between the upper and lower surfaces of the fibrous layer 6.

The hot melt materials as the components of the topsheet 2 and the fibrous layer 6 may be a film or fibers, for example, of polyethylene, polypropylene, nylon, polyester resin or composite fibers thereof. Alternatively, hydrophilic materials such as rayon fibers or pulp fibers up to 20% by weight may be mixed into the above-mentioned materials. The backsheet 3 and the liquid-absorbent core 4 may be of the materials usually used as the materials for these members. To fuse the topsheet 2 and the fibrous layer 6 together, the conventional technique such as heat embossing may be used in a pattern of spots as presented by the fused spots 7 in Figs. 1 and 2, or straight lines, curved lines or combination of these lines and spots.

The disposable body fluids absorbent padding according to the invention is advantageous in that the topsheet and the liquid-guiding fibrous layer are never peeled off from each other and the component fibers contained in the sheet and layer are never loosened from one another independently of their thicknesses, since the fibrous layer interposed between the topsheet and the liquid-absorbent core is integrally bonded to the topsheet in the direction of their thicknesses. Accordingly, even if the padding is bent or

wrinkled during its use, the body fluids can be rapidly transferred from the upper surface of the topsheet into the liquid-absorbent core without occurrence of leaking sideways.

## Claims

1. A disposable body fluids absorbent padding comprising a liquid-permeable topsheet, a liquid-impermeable backsheet, a liquid-absorbent core disposed between these two sheets and a liquid-guiding fibrous layer being more hydrophilic than said topsheet and interposed between said topsheet and said liquid-absorbent core in order to guide the body fluids from said topsheet into said core, wherein:

hot melt materials contained in said topsheet and said liquid-guiding fibrous layer, respectively, are fused at spots arranged intermittently in a plane of said topsheet and thereby said topsheet and said liquid-guiding fibrous layer are integrally bonded together at said spots in the direction of a thickness defined between the upper surface of said topsheet and the lower surface of said liquid-guiding fibrous layer.

2. A disposable body fluids absorbent padding according to Claim 1, wherein said fusion is achieved by fusing lines extending in two different directions and the fusing lines are arranged in a lattice pattern when they are viewed as a whole.
3. A disposable body fluids absorbent padding according to Claim 2, wherein said lines are a plurality of intermittent fusion spots.
4. A disposable body fluids absorbent padding according to Claim 1, 2 or 3, wherein each of said fused spots is compressed to have a high density and to form a groove.

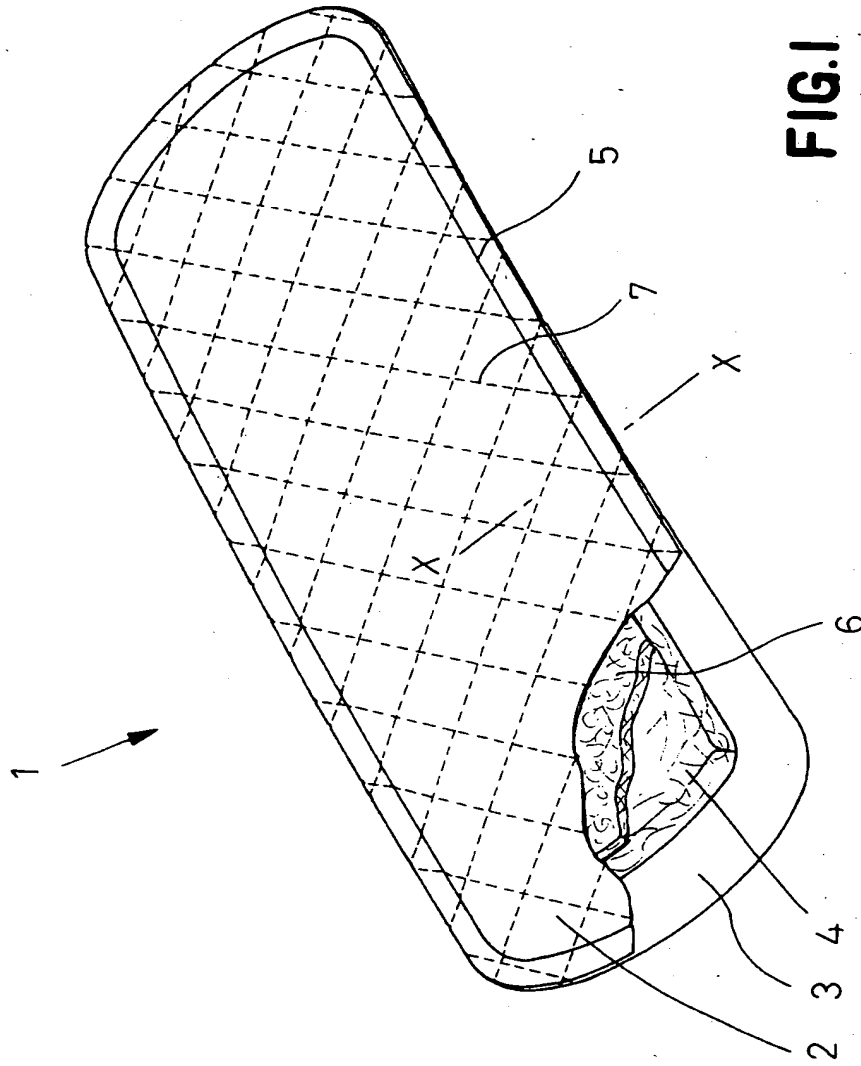
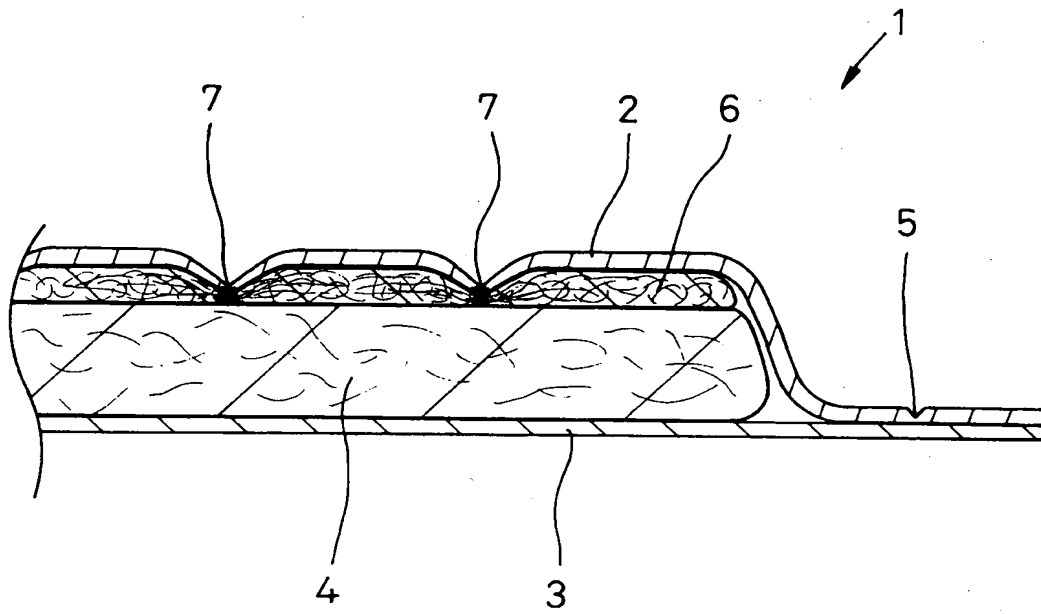


FIG. 1

FIG.2



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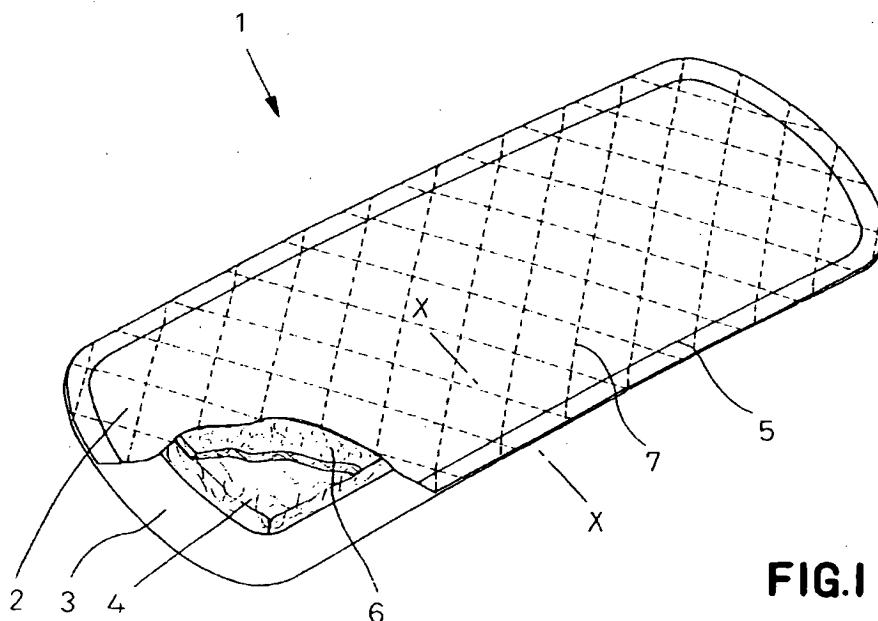
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**FIG.1**

**EP 0 685 214 A3**



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## EUROPEAN SEARCH REPORT

Application Number

EP 95 30 3755

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	GB 2 114 445 A (KIMBERLY CLARK CO) 24 August 1983	1	A61F13/15
A	* the whole document *	3,4	A61F13/46
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A	US 4 798 603 A (MEYER STEPHEN C ET AL) 17 January 1989	1	
	* column 9, line 1 - line 16; claims 1,22 *		
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A	EP 0 059 498 A (PROCTER & GAMBLE) 8 September 1982	1,2,4	
	* claims 1-4; figure 1 *		
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A	WO 88 05269 A (MOELNLYCKE AB) 28 July 1988	1	
	* page 6, line 23 - line 33; claim 1; figure 3 *		
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A	US 2 788 003 A (MORIN) 9 April 1957	1,2,4	
	* claim 1; figures *		
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A	US 4 590 114 A (HOLTMAN DENNIS C) 20 May 1986	1,2,4	
	* abstract; figure 3 *		
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The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			A61F
Place of search		Date of completion of the search	Examiner
BERLIN		24 July 1997	Kanal, P
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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